IN THE CLAIMS

1. (Currently Amended) A method for controlling an amplifier in an optical network, comprising:

determining primary pump power information for a primary amplifier;

communicating the primary pump power information to a secondary amplifier coupled to the primary amplifier;

generating secondary pump control information for the secondary amplifier based on the primary pump power information, wherein generating secondary pump control information comprises adjusting parameters of the primary pump power information for one or both of a difference in relative gains of the primary amplifier and secondary amplifier and a difference in relative power ratio of the primary amplifier and the secondary amplifier; and

amplifying a first optical signal at the secondary amplifier based on the secondary pump control information.

2. (Original) The method of Claim 1, further comprising amplifying a second optical signal at the primary amplifier, wherein the first optical signal and the second optical signal comprise the same channels.

3. (Currently Amended) The method of ~~Claim 1~~ Claim 2, further comprising:

measuring an input power of ~~a third~~ the second optical signal at the primary amplifier;

measuring an output power of the ~~third~~ second third optical signal at the primary amplifier; and

wherein determining primary pump power information for a primary amplifier comprises determining primary pump power information based on the input power and the output power.

4. (Canceled)

5. (Canceled)

6. (Canceled)

7. (Original) The method of Claim 1, wherein:

the primary amplifier comprises a pre-amplifier of an optical node; and

the secondary amplifier comprises a distributing amplifier of the optical node.

8. (Original) The method of Claim 1, wherein the primary amplifier and the secondary amplifier comprise erbium doped fiber amplifiers (EDFAs).

9. (Currently Amended) A system for controlling an amplifier in an optical network, comprising:

a primary amplifier coupled to a secondary amplifier, the primary amplifier comprising automatic gain control circuitry operable to:

determine primary pump power information for the primary amplifier; and

communicate the primary pump power information to the secondary amplifier; and

the secondary amplifier comprising:

tuning circuitry operable to generate secondary pump control information for the secondary amplifier based on the primary pump power information, wherein generating secondary pump control information comprises adjusting parameters of the primary pump power information for one or both of a difference in relative gains of the primary amplifier and secondary amplifier and a difference in relative power ratio of the primary amplifier and the secondary amplifier; and

gain medium operable to amplify a first optical signal based on the secondary pump control information.

10. (Original) The system of Claim 9, wherein the primary amplifier comprises gain medium operable to amplify a second optical signal, wherein the first optical signal and the second optical signal comprise the same channels.

11. (Currently Amended) The system of ~~Claim 9~~ Claim 10, wherein the primary amplifier further comprises:

an input monitor operable to measure an input power of ~~a third~~ the second optical signal;

an output monitor operable to measure an output power of the ~~third~~ second optical signal; and

wherein automatic gain control circuitry operable to determine primary pump power information comprises automatic gain control circuitry operable to determine primary pump power information based on the input power and the output power.

12. (Canceled)

13. (Canceled)

14. (Canceled)

15. (Original) The system of Claim 9, wherein:

the primary amplifier comprises a pre-amplifier of an optical node; and

the secondary amplifier comprises a distributing amplifier of the optical node.

16. (Original) The system of Claim 9, wherein the primary amplifier and the secondary amplifier comprise erbium doped fiber amplifiers (EDFAs).

17. (Currently Amended) A system for controlling an amplifier in an optical network, comprising:

means for determining primary pump power information for a primary amplifier;

means for communicating the primary pump power information to a secondary amplifier coupled to the primary amplifier;

means for generating secondary pump control information for the secondary amplifier based on the primary pump power information, wherein generating secondary pump control information comprises adjusting parameters of the primary pump power information for one or both of a difference in relative gains of the primary amplifier and secondary amplifier and a difference in relative power ratio of the primary amplifier and the secondary amplifier; and

means for amplifying a first optical signal at the secondary amplifier based on the secondary pump control information.

18. (Original) The system of Claim 17, further comprising means for amplifying a second optical signal at the primary amplifier, wherein the first optical signal and the second optical signal comprise the same channels.

19. (Canceled)

20. (Canceled)

21. (Canceled)